

•M•C•C•

Micro Commercial Components

Micro Commercial Components
20736 Marilla Street Chatsworth
CA 91311

Phone: (818) 701-4933

Fax: (818) 701-4939

Features

- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL Rating 1
- Ideally Suited for Automatic Insertion
- 150°C Junction Temperature
- For Switching and AF Amplifier Applications

Mechanical Data

- Case: SOT-23, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Weight: 0.008 grams (approx.)

Marking Code (Note 2)

Type	Marking	Type	Marking
BC856A	3A	BC857C	3G
BC856B	3B	BC858A	3J
BC857A	3E	BC858B	3K
BC857B	3F	BC858C	3L

Maximum Ratings @ 25°C Unless Otherwise Specified

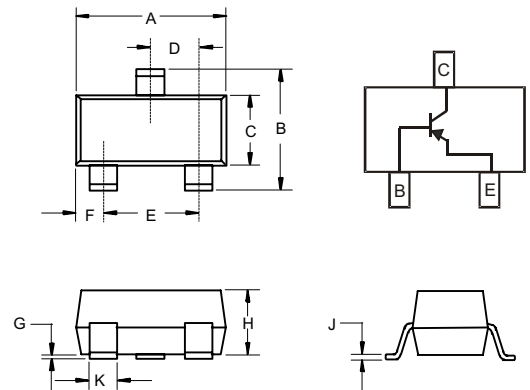
Charateristic	Symbol	Value	Unit
Collector-Base Voltage	BC856 BC857 BC858 V_{CBO}	-80 -50 -30	V
Collector-Emitter Voltage	BC856 BC857 BC858 V_{CEO}	-65 -45 -30	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Emitter Current	I_{EM}	-200	mA
Power Dissipation@ $T_s=50^\circ\text{C}$ (Note1)	P_d	310	mW
Operating & Storage Temperature	T_j, T_{STG}	-55~150	°C

- Note:**
1. Package mounted on ceramic substrate 0.7mm X 2.5cm² area.
 2. Current gain subgroup "C" is not available for BC856

**BC856A
THRU
BC858C**

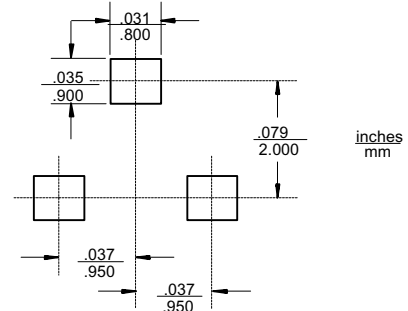
**PNP Small
Signal Transistor
310mW**

SOT-23



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.098	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

Suggested Solder Pad Layout



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BC856A thru BC858C



Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 3)	BC856 BC857 BC858	$V_{(BR)CBO}$	-80 -50 -30	— — —	— — —	V	$I_C = 10\mu\text{A}$, $I_B = 0$
Collector-Emitter Breakdown Voltage (Note 3)	BC856 BC857 BC858	$V_{(BR)CEO}$	-65 -45 -30	— — —	— — —	V	$I_C = 10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage (Note 3)		$V_{(BR)EBO}$	-5	—	—	V	$I_E = 1\mu\text{A}$, $I_C = 0$
H-Parameters							
Small Signal Current Gain	Current Gain Group A B C	h_{fe} h_{fe} h_{fe}	— — —	200 330 600	— — —	— — —	$V_{CE} = -5.0\text{V}$, $I_C = -2.0\text{mA}$, $f = 1.0\text{kHz}$
Input Impedance	Current Gain Group A B C	h_{ie} h_{ie} h_{ie}	— — —	2.7 4.5 8.7	— — —	$k\Omega$ $k\Omega$ $k\Omega$	
Output Admittance	Current Gain Group A B C	h_{oe} h_{oe} h_{oe}	— — —	18 30 60	— — —	μS μS μS	
Reverse Voltage Transfer Ratio	Current Gain Group A B C	h_{re} h_{re} h_{re}	— — —	1.5×10^{-4} 2×10^{-4} 3×10^{-4}	— — —	— — —	
DC Current Gain (Note 3)	Current Gain Group A B C	h_{FE}	125 220 420	180 290 520	250 475 800	—	
Thermal Resistance, Junction to Substrate Backside		$R_{\theta JSB}$	—	—	320	$^\circ\text{C/W}$	Note 1
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$	—	—	400	$^\circ\text{C/W}$	Note 1
Collector-Emitter Saturation Voltage (Note 3)		$V_{CE(SAT)}$	—	-75 -250	-300 -650	mV	$I_C = -10\text{mA}$, $I_B = -0.5\text{mA}$ $I_C = -100\text{mA}$, $I_B = -5.0\text{mA}$
Base-Emitter Saturation Voltage (Note 3)		$V_{BE(SAT)}$	—	-700 -850	—	mV	$I_C = -10\text{mA}$, $I_B = -0.5\text{mA}$ $I_C = -100\text{mA}$, $I_B = -5.0\text{mA}$
Base-Emitter Voltage (Note 3)		$V_{BE(ON)}$	-600 —	-650 —	-750 -820	mV	$V_{CE} = -5.0\text{V}$, $I_C = -2.0\text{mA}$ $V_{CE} = -5.0\text{V}$, $I_C = -10\text{mA}$
Collector-Cutoff Current (Note 3)	BC856 BC857 BC858	I_{CES} I_{CES} I_{CES} I_{CBO} I_{CBO}	— — — — —	— — — — —	-15 -15 -15 -15 -4.0	nA nA nA nA μA	$V_{CE} = -80\text{V}$ $V_{CE} = -50\text{V}$ $V_{CE} = -30\text{V}$ $V_{CB} = -30\text{V}$ $V_{CB} = -30\text{V}$, $T_A = 150^\circ\text{C}$
Gain Bandwidth Product		f_T	100	200	—	MHz	$V_{CE} = -5.0\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$
Collector-Base Capacitance		C_{CBO}	—	3	—	pF	$V_{CB} = -10\text{V}$, $f = 1.0\text{MHz}$
Noise Figure		NF	—	2	10	dB	$V_{CE} = -5.0\text{V}$, $I_C = 200\mu\text{A}$, $R_S = 2k\Omega$, $f = 1\text{kHz}$, $\Delta f = 200\text{Hz}$

- Notes:
1. Package mounted on ceramic substrate 0.7mm x 2.5cm² area.
 2. Current gain subgroup "C" is not available for BC856.
 3. Short duration pulse test to minimize self-heating effect.



Ordering Information

Device	Packing
(Part Number)-TP	Tape&Reel;3Kpcs/Reel

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